

**ABSTRACT****THE INFLUENCE OF POLOXAMER 407 CONCENTRATION  
AND DURATION OF MILLING ON THE PHYSICAL  
CHARACTERISTICS AND PARTICLE STABILITY OF  
ARTESUNATE NANOCRYSTALS  
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Artesunate is a derivate of artemisinin which is highly effective in treating acute malaria but it has poor water solubility with fast elimination time. One strategy to overcome these problems is nanocrystals formulation. It consists of drug crystals in nanometer size stabilized with surfactant or polymers. Poloxamer 407 is a block co-polymer that can act as stabilizer with sustained release effect. This research is aimed to investigate optimum concentration and milling time to produce smallest and stable artesunate nanocrystals. 0.5g Artesunate powder was dispersed in 10mL solution of Poloxamer 407 (concentration 15%, 25% and 50% w/w) and this coarse suspension was milled up to 48 hours. Sample was taken every 5, 24 and 48 hour then analyzed for its size using Photon Correlation Spectroscopy. Stability of artesunate nanosuspension was examined by analyzing its particle size after one month storage at 8°C. Smallest particle sizes obtained was 222 nm for poloxamer 407 15% w/w after milling for 24 hours and 28 days storage resulted in larger particle size of 50 nm. X-ray diffraction showed crystalline shape for all artesunate nanocrystals obtained.

**Keywords:** artesunate, nanocrystals, wet ball milling, poloxamer 407